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Environmental Chemical Exposure Trends in CKD Patients: A Study During Recent Global Health Changes

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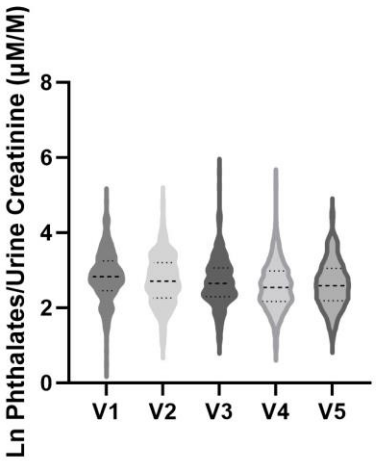
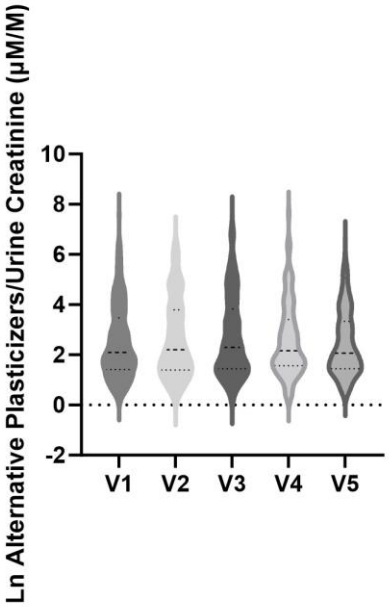
Objectives : Phthalates, widely used as plasticizers in consumer products, are known to disrupt the endocrine system and adversely affect human health. Recent studies have linked phthalate exposure to reduced kidney function and increased albuminuria in chronic kidney disease (CKD) patients. This study investigates the levels of environmental chemical exposures, specifically phthalates and alternative plasticizers, in CKD patients during recent global health changes.
Methods : This study utilized data from the Study on Kidney Disease and Environmental Chemicals (SKETCH, Clinical Trial No NCT04679168), a prospective cohort of CKD patients. The cohort, comprising patients who first visited participating hospitals between June and October 2020 and followed up until December 2022, provided insights into demographic, behavioral, and laboratory data. Urine samples were analyzed for thirty-seven metabolites from 9 light phthalates, 12 heavy phthalates, and 16 alternative plasticizers.
Results : Our analysis revealed that during the global health changes, levels of light phthalates and alternative plasticizers in CKD patients significantly increased, while heavy phthalates concentrations decreased compared to pre-pandemic levels. The 1-year follow-up showed a marked decrease in risk perception for infectious diseases, including during the pandemic. Interestingly, light phthalate levels initially decreased in the first 6 months and then significantly increased in the last 6 months of the year. In contrast, heavy phthalates levels continuously decreased. Alternative plasticizer levels remained consistent throughout the year. Furthermore, heavy phthalates levels were significantly higher in patients with heightened risk perception but did not vary with changes in behavioral patterns.
Conclusions : The study highlights a notable trend in environmental chemical exposures among CKD patients during recent global health changes. A shift in risk perception was associated with fluctuating levels of heavy phthalates, light phthalates, and alternative plasticizers. These findings underscore the dynamic nature of environmental exposures in response to global health events and their potential impact on vulnerable populations such as CKD patients.

그림 1 프탈레이트.jpg

(A)


Ln Phthalates/Urine Creatinine (μM/M)
8
6
4
2
0
V1
V2
V3
V4
V5

(B)


Ln Alternative Plasticizers/Urine Creatinine (μM/M)
10
8
6
4
2
0
-2
V1
V2
V3
V4
V5